

# CORPORATE PLAN 2008/09-2012/13



## **University of Colombo School of Computing**

**January 2009**

# Foreword by the Director

The University of Colombo School of Computing (UCSC) is a Centre of Higher Learning setup under the University of Colombo for achieving excellence in Research and the dissemination of knowledge in Computer Science and Information and Communication Technology in Sri Lanka. Far too much of what passes off as *education* in this modern ‘market driven’ economy is little more than an accumulation of *facts* for facing examinations. At the UCSC we believe such efforts only scratch at the *recall (of data)* level of Bloom’s taxonomy of the kinds of human learning. This *data* arranged in context becomes useful *information*. Information interpreted correctly turns into *knowledge*. However, it is the appropriate use of knowledge which we call *wisdom*. It is towards helping our students realize this ultimate goal, that we strive at the UCSC to realize the motto of the University of Colombo, *Wisdom Enlightens*.

In striving for excellence in education, the UCSC has always attempted to foresee the needs of the country as a whole. Introducing Computer Science as a field of specialization as early as in 1985, we produced Software Engineers for the emerging software industry in Sri Lanka in addition to making fit the best of these for research and higher education. We also responded to the ever increasing demand for IT professionals by the ICT industry at the end of the millennium by introducing the first external IT degree in the form of the BIT in 2000. Beginning in 2005, we are also taking the bold initiative of introducing a new Information Systems programme, the BICT, to fill a widely felt gap in the industry for Information Systems specialists – in recognition of the maturing of the field of Computer Science and Information and Communication Technology.

The UCSC is at a stage of its evolution in which it has been able to secure high donor confidence as evidenced by no less than 10 simultaneous foreign funded projects underway since 2005. It also has gained the recognition from the local ICT industry with many partners willing to take part in student placement, collaborative research and job placement activities. Holding down the most qualified set of Academics and Researchers in the field, the UCSC is currently engaged in mobilizing its vast research potential in order to clearly distinguish itself from the rest of the ICT education industry in Sri Lanka and the Region as a whole.

In the final analysis however, there is something far more important than both past performance and present potential in ensuring the continued success of the UCSC: a clear *strategic plan* and a mechanism for ensuring its regular updating for moving forward in the quest of pioneering in the

field of ICT. This document embodies the corporate effort put in by the entire organization to enumerate the main strategies to be pursued over the next 5 year period by the UCSC.

In the coming 5 year period, 7 strategy strands have been identified along the themes of, educational process, research innovation, consultancy, social responsibility, human and physical resource expansion, good governance, and administrative infrastructure. Some of the key developments envisaged during this period include, the setting up of a research facility outside Colombo, attracting international researchers through an endowment fund, expanding the teaching-learning infrastructure available to students and staff by acquiring more physical space, launching consultancy services through the new company, reaching out to the less privileged within and outside the university through relevant training, enhancing visibility nationally and internationally and setting up effective management and strategic information systems.

An effort such as that taken to compile this plan incorporating the views of the entire organization would not have been possible without an experienced resource person. To Mr. Jayantha De Silva is the biggest debt the UCSC has for playing that very crucial role and believing that a final cohesive document will emerge. To other members of the Board of Management who contributed valuable time and effort sustained over a long period of time, in particular, Mr. Dharmasiri Peiris, Mrs. Ramani Amarasuriya, Mr. Sujeewa Mudalige and Dr. Shahani Weerawarana; my very sincere appreciation. The Academic Faculty of the UCSC, in particular the 'strategy owners' who did the bulk of the hard work of doing SWAT and Gap analysis, reflecting on past successes and failures and dreaming of what might be; my heartfelt gratitude. To all other staff of the institution from the senior administrators to the contract staff who ensure smooth functioning of daily activities; a very big thank you for your involvement in this endeavor.

# Description of the UCSC

## A Brief History

The teaching of Computing in the University of Colombo first started way back in 1967 by the setting up of the Statistical Unit as a separate unit of the Department of Mathematics. Later with the initial guidance of Professor V.K Samaranayake, the statistical unit was enhanced as the Statistical Consultancy and Data Processing Service Centre. This had paved the way to many future developments. By 1985, this Centre had grown into the Department of Statistics and Computer Science (DSCS). The major function of this department was to conduct special degree programmes in Statistics and in Computer Science. The DSCS offered Computer Science specialization programme, producing just 40 students per batch, in no way sufficient to meet the growing demand in the field of Computer Science.

In 1997, a batch of 50 students was taken directly to study Computer Science, through the University Grants Commission, however, by this time, it was realized by many that the Computer Science subdivision of the DSCS need to be expanded as a separate department to meet the growing demand in the field of Computer Science. As a result, in 2001, the DSCS was separated into two departments namely Department of Computer Science (DCS) and Department of Statistics (DS).

The Department of Computer Science (DCS) identified its own limitations of operating in the restrictive framework of a Faculty and at the same time it understood the importance of having a strong industry relationship for exploiting future growth potential. The university understood the importance of a strategic merger between the industry focused Institute of Computer Technology (ICT) and the more theoretically oriented Department of Computer Science (DCS) of the University of Colombo.

The ICT had a strong relationship with the industry at the same time a high institutional profile among foreign donor agencies. The ICT also enjoyed much more autonomy in their business operations making it easier for receiving large amounts of resources from Japan International Cooperation Agency (JICA), Swedish International Development Agency (Sida) and several other donors.

This merger gave birth to the University of Colombo School of Computing (UCSC) on 1<sup>st</sup> September 2002. Prof. V.K Samaranayake became the founder Director of the UCSC, whose proactive thinking set the path to achieve success in several succeeding endeavors of the UCSC. Through all this, the

UCSC has been able to position itself as a Centre of Excellence in ICT in the university system of Sri Lanka.

## **Key Distinctives**

### **Highly Qualified Academic Staff**

Competency of the academic staff is one of the crucial factors in determining the quality of the educational process. The UCSC presently has over 15 senior lecturers with doctoral qualifications and a further 12 with Masters qualifications. The rest of its 40-strong faculty are graduates with excellent first degrees. None of the other universities have such a human resource in IT/CS, owing to the high staff turnover rates in the field. This valuable resource has been built up over a long period of time with foresight and long-term investment and is now bearing rich dividends. As such, the UCSC can definitely claim an advantage over its competition in computing in Sri Lanka and the region.

### **Strong Research Potential**

With the strong research training investment over the past 2 decades, the UCSC now possesses arguably the strongest research potential in computing in Sri Lanka – one which matches that available in the best of international universities. In the past, owing to the less mature status of the ICT industry, some of this resource was not fully exploitable. More recently however, this research force at the UCSC has become increasingly more engaged in collaborating with the software industry in particular, and is the single most identifiable distinctive that sets the UCSC apart from its competition in the industry.

### **Healthy Industry-University Relationship**

The Professional Development Centre of the UCSC develops and promotes strategic relationships with key organizations in the IT industry. This gives the UCSC an advantage over other universities in fulfilling the industrial training requirements of its undergraduate students among others. The PDC has managed to increase both the period (from 3 to 6 months) and the numbers of students placed in industry (from 40 until 2005, to 120 in the year 2006 and 240 from 2008) as part of their mandatory internships. In addition to this, the Computing Services Centre of the UCSC undertakes consultancy on IT for state and private sector organizations while also conducting training in new areas of technology.

### **Funding and Facilities**

One of the cornerstones of the success of the UCSC and its predecessors has been the international level facilities available to faculty and students. It has been one of the chief means through which

staff retention has been possible. This resource has been strengthened over the years through donor support which has been readily forthcoming owing to our past track record. In addition to this, the UCSC's policy of earning through consultancy and research has made it self-sufficient with respect to operational expenses and the purchase of key technologies.

# **VISION**

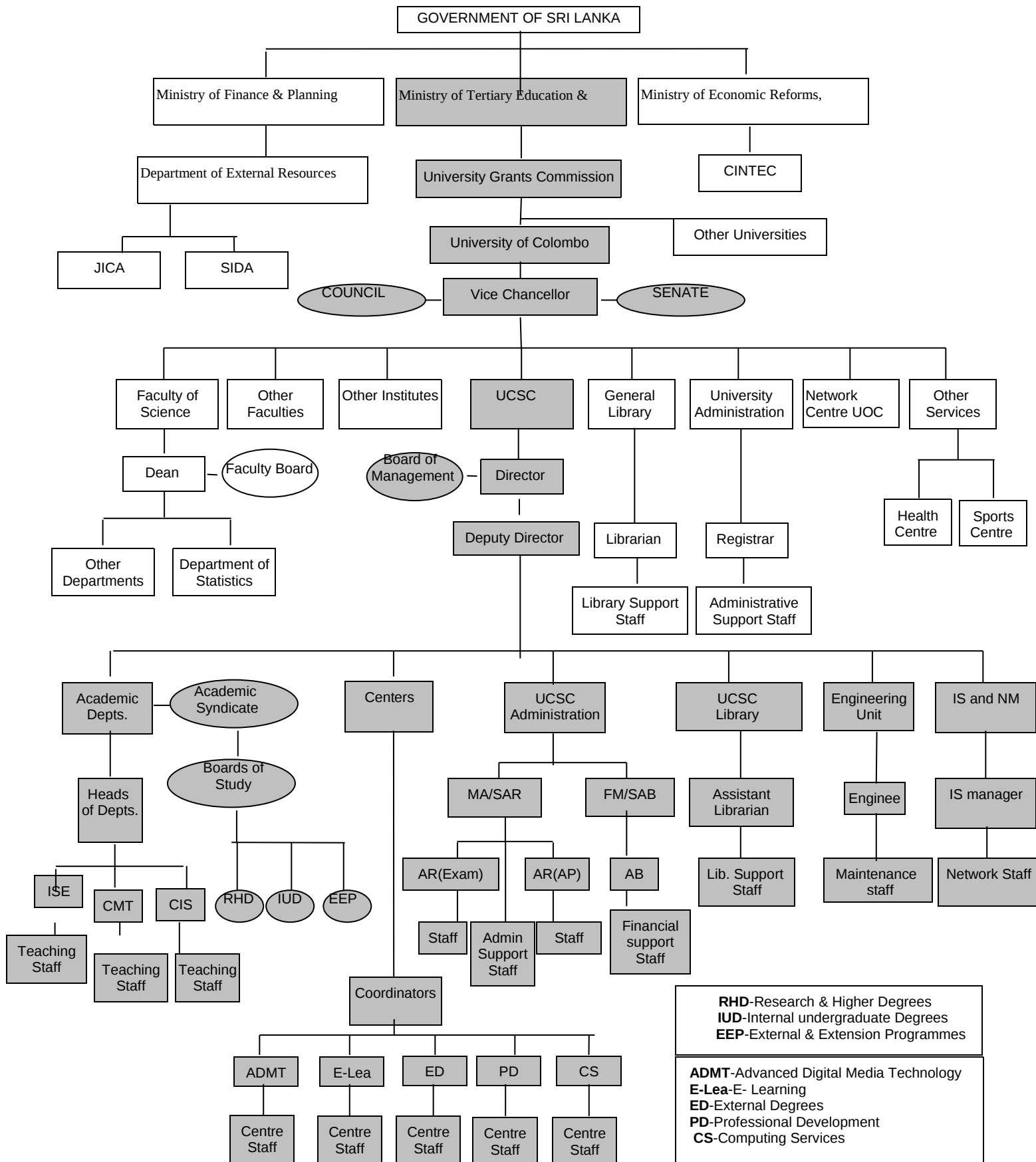
**Creating new knowledge,  
sustaining a culture of critical inquiry,  
and fostering a spirit of service  
and commitment to the nation  
in the context of the global knowledge economy.**

# **MISSION**

**Producing men and women  
of the highest technical competency  
with uncompromising integrity and social accountability; who are  
capable of creative, analytical  
and independent thinking,  
and who contribute actively to national development  
from a global perspective.**



# ORGANIZATIONAL CHART OF UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING



## **Organization of the UCSC**

For the undergraduate academic programme, government funding is directly received by the UCSC through the UGC. The UCSC has three academic departments and the academic staff is allocated to these departments based on their specialization and teaching expertise. The departments are,

1. Information Systems Engineering (ISE),
2. Computation and Intelligent Systems (CIS) and,
3. Communication and Media Technologies (CMT).

## **Centers of the UCSC**

UCSC also performs many secondary activities. These activities are organized under five separate centers. Each center has a coordinator who manages the day-to-day operations of the centre. The five centers are as follows:

1. Computing Services Centre (CSC)
2. External Degrees Centre (EDC)
3. Advanced Digital Multimedia Centre (ADMTC)
4. Professional Development Centre (PDC)
5. e-Learning Centre (e-LC)

### *Computing Services Centre (CSC)*

The Computing Services Centre, which is the Consultancy arm of the UCSC was established in 1990 to provide Consultancy Services to the IT and related industries. There are many projects undertaken by the CSC such as Systems Design and Development, Software Project Consulting, Tender Evaluations, Systems Recommendations, Web Publishing, Feasibility Studies, Systems Design, Desktop Publishing & Printing, Statistical Analysis, Recruitment Testing, Evaluation of Computer Software and Hardware, Processing of Election Results for Commissioner of Elections, etc.

### *External Degree Center (EDC)*

The UCSC having the most advanced training resources and experience in Sri Lanka in the field of ICT training set up the External Degree Centre (EDC) to conduct the Degree of Bachelor of Information Technology (External). The UCSC conducts the examinations leading to the first-ever External Degree in IT in Sri Lanka and the University of Colombo awards the degree.

### *Advanced Digital Multimedia Technology Center (ADMTC)*

Advanced Digital Media Technology Centre (ADMTC) is one of the centres under University of Colombo School of Computing (UCSC) set up to carry out training for trainers of web-based training and content development at its state-of-art digital studio, teaching and development laboratories.

The facilities of the ADMTC consist of two technologically enhanced teaching laboratories/classrooms, a development lab, Digital studio with non linear editing equipment, high speed data link with a Giga bit fiber backbone and a server room equipped with high-end servers. A wide range of software is installed on computers and servers.

The Teaching Laboratory facilitates conducting lectures for twenty participants at a time. Twenty numbers of high-end workstations which are specially setup for multimedia and Digital Video capturing/editing works are ready for class room sessions. Electronic whiteboard, large TV screen with DVD player, VCR and multimedia projector are setup in the lab for interactive learning and presentations. Online teaching material available at the ADMTC web server makes a complete environment for interactive learning.

### *Professional Development Centre (PDC)*

The mission of the Professional Development Centre (PDC) is to produce Information and Communication Technology (ICT) graduates having extra curricular skills such as professional skills, business skills, communication skills, community service skills, innovative capacity and entrepreneurship to pursue successful careers thereby contributing to the socio-economic development of Sri Lanka.

PDC was setup for keeping a close liaison with the IT industry and for improvement of the academic programmes through industry partnership thereby enhancing the quality of the undergraduates and staff. The programmes conducted by PDC primarily concentrate on the following aspects:

- Improving professional skills of the staff and the students by organizing invited talks and public lectures and conducting workshops.
- Industrial placements for undergraduates
- Promoting inter-cultural harmony

### *e-Learning Centre (ELC)*

Having identified that e Learning – the provision of learning through the electronic media – has enormous potential as an educational tool, an e-Learning Center (eLC) was established at the University of Colombo School of Computing (UCSC) to provide e-learning service to both BIT external degree programme and all internal degree programmes (both undergraduate and postgraduate).

In order to enhance activities of the e-learning center of the UCSC, an e- learning project was started under the support of Sida in November of 2002. The scope of this project covered providing Swedish competence in pedagogy for e-learning as well as supporting research. The collaboration between Swedish and Sri Lankan Universities focused on developing training/learning methodologies and

pedagogically designed teaching/learning materials for the BIT external degree programme of the UCSC. IT University of Stockholm was selected as the Swedish partner for the first year phase of the project. As a result of this collaboration, there was a knowledge transfer based on their experience, especially with respect to educational technology theory, instructional design, digital learning environment, pedagogies, methodology and management of e-learning. Using funds of this project, the e-learning centre was able to acquire the necessary equipments both software and hardware to provide e-learning service to BIT students through Internet.

The vision of the eLC is to become a National e-Learning Center (NeLC) which provides its service to all Sri Lankan one day. It is planning to achieve this objective first by expanding e-learning service to BIT programme to make a fully-fledged distance learning programme called eBIT. In this project, teaching, learning and assessments will be completely done through a learning management system irrespective of location, time and phase. e-learning center will also provide different services to non-ICT degree programmes as well as general courses about Languages, Mathematics and Science for different types of users in the second phase of project funded under Sida. Academic staff of UCSC as well as the staff and research students of eLC is actively involved in this endeavor.

## **Facilities at the UCSC**

### *Library*

The library has a large collection of 1873 titles with 8650 copies of those titles. The majority of these materials are less than 5 years old. The library has a reference area with a seating capacity of 84 and it also provides an electronic catalogue. Further, it has a collection of 486 e-books [CDs] covering 12 subject areas in computing.

### *Laboratories*

The UCSC is in possession of a large number of PC/Linux laboratories equipped with modern and up to date technologies enabling it to deliver successful computer science study programmes. UCSC also has a few dedicated laboratories for external courses that serve as a cushion during the peak demand times. A fully equipped studio at the Advanced Digital Multimedia Technology Centre of the UCSC is one of the best studios in Sri Lanka, playing a central role in providing distance-learning materials.

### *Maintenance Unit*

The maintenance unit of the UCSC gives the helping hand whenever technical support is required for computer laboratories, upgrading and installations of software and hardware, and other resources such as central A/C system, water supply, power supply and PC maintenance.

### *Network Operating Center*

With the view of centralizing the operations of the computer network of the University of Colombo the Network Operating Centre (NOC) was established in 2002 under the approval of the Vice Chancellor. NOC is physically located at UCSC and it is the central position, which provides the network connections to all the other faculties and centers in the university. The Internet facility to the university through the LEARN network is also channeled via the NOC.

NOC is well equipped with modern networking equipment including Servers, Switches, Routers and test equipment received under the financial support of Sida and ADB. The entire backbone cable system of the campus wide network is centered at the NOC providing the connectivity to over 700 users.

### *Digital Studio*

An advanced digital studio is equipped with state-of-the-art digital equipments such as digital video cameras, video switcher, editing control unit, audio mixer, lighting system and non-linear editing system.

## **Other facilities and Services Available**

### *Sports Facilities*

Sports facilities, such as, the Gymnasium and Tennis Courts are made available by the Department of Physical Education of the University of Colombo. Those facilities can be accessed by the UCSC students. Furthermore students can participate in the events organized by the University.

### *Healthcare Facilities*

In the event of sickness or injury, students can obtain medical assistance from the Health Centre of the University of Colombo.

### *Career Guidance*

The Professional Development Centre with contacts in the IT industry is in a position to provide guidance on job opportunities.

### *Student Counseling*

Every student has the opportunity of seeking advice and assistance from the Student Counselor in relation to academic matters as well as, personal matters. Academic staff members have been assigned two specific time slots per week for student interaction, and the students are encouraged to meet the staff during these time periods.

## *Societies and Student Unions*

As per the by-laws for internal undergraduates, elections are held at the beginning of each academic year to elect office bearers to the student union of UCSC. Acceptance of nominations and election dates are notified through a public notice. As a tradition office bearers of the UCSC Student Union are appointed unanimously through the consensus of the students.

## **Academic Programmes of the UCSC**

### **Undergraduate Education**

#### *Structure of the Degree Programme*

The UCSC offers two Computer Science Degree Programmes and two Information and Communication Technology Degree Programmes where each of the degree programmes is of three or four year duration.

Initially all students will be enrolled for a 3 year Degree Programme. Students who excel in the first three years and satisfy all the relevant requirements stipulated will be given the opportunity to enroll for a 4 year Degree Programme.

The academic programmes of the UCSC are based on a semester system with 2 semesters per academic year and operate on a course basis. The UCSC offers two types of courses namely Academic Courses and Enhancement Courses. Academic courses provide subject knowledge and enhancement courses provide knowledge on a wide range of disciplines that are required for a holistic education. In each year UCSC may offer a number of mandatory and optional courses. Each course is assigned a credit value. A credit is equal to 15 hours of lectures or 30 hours of practical or an equivalent combination of lectures and practical. Each student is required to register for a minimum of 30 academic credits and possibly a prescribed number of enhancement credits per year.

#### *Name of the Degrees*

The 3-year and 4-year Computer Science Degrees are named the Degree of Bachelor of Computer Science, BCS. and the Degree of Bachelor of Science in Computer Science, BSc (Computer Science) respectively. The 3-year and 4-year Information and Communication Technology Degrees are named the Degree of Bachelor of Information and Communication Technology, BICT. and the Degree of Bachelor of Science in Information and Communication Technology, B.Sc(Information and Communication Technology) respectively.

## **Postgraduate Education**

### *Masters Programmes*

The Masters programme has a long history at UCSC; starting with the initiation of the original programme over two decades ago. This programme was conducted by the Department of Computer Science – a previous incarnation of the UCSC.

The UCSC conducts two different Masters Programmes catered towards two distinct categories of people:

- The Master of **Information Technology** is a programme targeted at graduates in disciplines other than computing who wish to pursue a career in an IT related area. This is also suitable for those who wish to specialize in a multidisciplinary field overlapping with IT such as Management, Networking or Multimedia technology.
- The Master of **Computer Science** programme is designed for CS/IT professionals who already possess a degree in Computing and who wish to acquire a postgraduate qualification in CS/IT with research exposure.

### *M. Phil. Programme*

UCSC admits graduates with good first degree results in Computer Science/Engineering for its full/part time M.Phil programme mainly centered on research projects in progress. Students can apply for the programme by forwarding an initial research proposal and preliminary application form together with certified copies of the necessary educational certificates.

### *Ph.D. Programme*

Prospective Ph.D. candidates are first required to register for a two year full-time MPhil at the UCSC. Based on their performance in the M.Phil, the higher degrees committee decides based on an examiners report if the work is of a sufficient standard to be extended to a PhD. In addition to this, many Split-PhD students who are registered in foreign countries currently work at the UCSC during their period(s) in Sri Lanka.

## **External Degree Programme**

The main purpose of establishing the External Degrees Centre (EDC) and the three-year external degree programme, Bachelor of Information Technology (BIT), is to widen the higher educational opportunities of the students who have been unsuccessful in meeting the competitive eligibility criteria for admission to the state university system.

Another reason has been the massive demand from the ICT industry for high quality human resources far exceeding the number provided by the state universities. The BIT degree programme

commenced in the year 2000 and has so far produced 176 graduates and almost all have been absorbed by the ICT industry. Minimum entry qualification for this programme is three passes in GCE Advanced Level Examination and a Credit Pass for Mathematics in GCE O/L Examination, in addition to passing a selection test.

UCSC provides a well-defined detailed syllabus that would help to lay a solid foundation on which, a student can build his career in ICT. The syllabi will be constantly updated to meet the industry requirements. Model question papers, a list of recommended textbooks are provided to the students. In the year 2003, e-Learning was introduced to the Year one BIT students through a Learning Management System (LMS). This was possible through assistance given by Sida (Swedish International Development Agency). LMS assists the students in learning through self-evaluating quizzes, collaborative learning using group assignments, etc. UCSC hopes to gradually extend the E-Learning facility to all the BIT students. Further support is given to BIT students by the regular TV programme telecast over TVLanka. Recommended text books have been made available in many public libraries throughout the country in response to student requests.

The programme is designed to:

- produce qualified ICT professionals in addition to the traditional University output
- set professional standards and encourage students to obtain skills in commercial ICT applications and in the usage of necessary tools
- enable those who could not enter the university due to severe competition to work towards obtaining a degree
- give an opportunity to those non-graduates already working in ICT to obtain a formal qualification in ICT through self-study.

### *Foreign students*

Foreign students, too, can register in the programme but currently they have no facility to sit for semester examinations outside Sri Lanka.

### **Short Term Courses at the UCSC**

The UCSC conducts specialized, short-term training programmes in the most advanced and up to date topics that are in demand in the industry. These programmes are designed with a view to enable a participant to learn about a particular programming language, a design methodology, new technologies or the use of specialized packages in small groups with close supervision. These courses are designed by the staff of UCSC to closely follow the industry needs and standards. Many of these courses are conducted over 5 or 10 days. Special programmes for individual groups from companies are arranged on demand. Some of the programmes are:



1. Training Course on Computer Aided Drafting Using AutoCAD 2004
2. Hands -on Training in CISCO Networking (CCNA New Syllabus)
3. Unix/Linux Fundamentals Network & System Administration
4. Training Course on java programming
5. Training Course on Software Design and Development
6. Training Course on Personal Computer Applications
7. Networking with Windows 2000 Server
8. Upgrading and Maintenance of Personal Computer Systems
9. Training Course on Computer Aided Drafting Using AutoCAD 2000/2002
10. Programming in Visual Basic
11. Dynamic Content Creation on the Web Using ASP/ASP. net with XHTML
12. Data Communication and Computer Networking
13. Database Management with MS SQL Server

### **Other Academic Activities conducted by the UCSC**

#### **International Training Programmes**

##### *Design, Installation, Administration & Maintenance of Network Systems (DIAMIN)*

The UCSC, under the Ministry of Higher Education of the Government of Socialist Republic of Sri Lanka has organized a training course in the Design, Installation, Administration and Maintenance of Communications and Network Systems.

The purpose of the Course is to provide participants from Asian, Pacific, Middle - Eastern and African countries with the necessary skills to design, install and manage computer networks and Internet based services.

At the end of the course the participants are expected to have gained the ability;

- To describe the principles of Communication and Networking operation of the Internet Services.
- To design the Network infrastructure for sharing of resources, accessing the Internet and offering services to the Internet.
- To administrate, troubleshoot and maintain the networks.
- To implement the security models and recognize the new trends.

The Governments of any Asian, Pacific, Middle - Eastern and African countries will be invited to apply by nominating applicant(s) for the course. The course will be conducted in a well-equipped Laboratory including the Internet connectivity and the state of the art teaching aids, located at the UCSC.

### *International Olympiad in Informatics (IOI)*

The International Olympiad in Informatics (IOI) is one of the six international science Olympiads. It is an algorithmic programming competition for school students under 20 years of age. In the IOI the contestants compete individually to solve a set of programming problems.

The main goals of the IOI are to stimulate interest in Informatics and to encourage exceptionally talented students from various countries to share their scientific and cultural experiences.

Sri Lanka has been sending a national team of four students accompanied by a Manager and a Deputy to the International Olympiad in Informatics each year since 1992. Sri Lanka has managed to win 1 Gold and 3 Bronzes at the 2004 Olympiad and 1 Bronze in 2005 bringing the total medals won so far to 3 Gold, 5 Silver and 14 Bronze medals.

The team was trained at the UCSC by a team of volunteers under the guidance of the Main Organising Committee, the Team Manager & his Deputy. The responsibility of sending a Sri Lankan team was originally with the Council for Information Technology (CINTEC) and since 2004 has been entrusted to the UCSC by the ICT Agency. Funding is from the income of the International IT conference IITC held annually organized by INFOTEL Society and Managed by the UCSC through a representative Management Committee.

### *Third Country Training Programme (TCTP)*

Third Country Training Programme (TCTP) in Information Systems Engineering commenced in 1998 and conducted annually until the year 2002 for participants from South, South Asian and Pacific countries. Funding was mainly from the Japan International Cooperation Agency (JICA). In 2000, participants from the African Continent too were included in JICA funding for TCTP. In 2001, Colombo Plan funded participants from Mongolia, Iran & the Philippines. In 2002, participants from Asian, Pacific and African countries took part in this programme.

### *International Information Technology Conference (IITC)*

IITC was first launched in 1998 as a key event connected with the declaration of 1998 as the Year of IT. Its success led to its continuation as an extremely successful annual event continuing for the last 6 years.

IITC seeks to bring together international researchers to present papers and generate discussions on current research in all aspects of the role of IT in National Development. The conference and workshops will focus on important problems and potential solutions in important areas of ICT.

It is intended to make participants aware of the opportunities and advantages that would accrue to the citizens of Sri Lanka by a society driven by ICT. IITC brings together some of the world renowned authorities in the field of ICT who will speak on the trends and the directions in ICT, affecting industry and research.

During the conference, several Keynote Speeches and over 25 internationally refereed papers would be presented by local and foreign ICT professionals and academics on topics of interest to the educational, medical, legal, financial, banking, communications, security services, trading, shipping and transport sectors, both public and private.

## **Research Activities at the UCSC**

### *Language Technology Research Laboratory*

The University of Colombo has pioneered work in Sinhala Localization since the 1980's by developing fonts and keyboard drivers for DOS and Windows. In the 1990's, work on Sinhala Language Processing was carried out at the undergraduate project level with tools such as dictionaries and spell checkers being produced at a research level.

More recently, it has become apparent that these efforts would only bear real fruit if industry standards are adopted for both Localization and Language Processing research and development. In order to realize this, a serious effort at producing commercial grade tools and resources began in 2003. With the award of a Canadian International Development Research Centre (IDRC) grant, the Language Technology Research Lab (LTRL) was set up in early 2004 with the specific aims of producing a large Sinhala Corpus and Lexical Resource, a Text-to-Speech Engine and an Optical Character Recognition application.

In addition to this, the LTRL is also involved in basic Localization work in collaboration with the ICT Agency (ICTA) Localization initiative as well as in research in the various other areas of Language Processing including Part-of-Speech Tagging, Automatic Word Clustering, Speech Recognition and Machine Translation among others.

### *Distributed Computing Research Group*

One of the earliest virtual research groups, the Distributed Computing group gathers together researchers from the UCSC with others from other universities and the industry periodically over the years. The most recent project undertaken is the GRID Computing project in collaboration with Uppsala University in Sweden.

### *3D Graphics and Virtual Reality Research Group*

The primary objective of the research is to virtually model the Sigiriya Rock. It includes a tour of the Sigiriya rock where the lion leg, entrance, frescoes area and several other areas has been modeled. 3D graphics modeling of archaeological artifacts and reconstruction of damaged artifacts is another objective. The creation of the cultural heritage database using the laser scanner and reconstruction of damaged artifacts are in progress.

### *Multimedia databases research group*

The main objective of the research is to explore how structured multimedia databases could be used to support web-based training, develop a framework to store multimedia objects and to develop tools to enable users to access this database efficiently with multiple modalities.

### *GIS research Group*

This is the most recent research group formed primarily around a US NSF grant to build the infrastructure for a distributed disaster management system. The main collaborators on this are the University of Maryland, US and the University of Moratuwa.

### *Information Systems Security Research Group*

The Information Systems Security Research Group is another active research group at the UCSC. It is an informal group of people with similar interests in areas such as security, cryptology, and distributed systems. The main areas of interests of the group include Public Key Infrastructures Hardware security tokens such as smart cards, Secure Java Development, Security issues in ad-hoc and sensor networks, Security protocols, Multi-party transactions, Medical information security and Privacy & law. Much of the best research has been inspired by tackling real problems, and the funding comes from a wide range of sources by collaborating with commerce and industry both in Sri Lanka and overseas.

## **Other Foreign Funded Projects of the UCSC**

In addition to the above research project, several foreign funded projects have also been undertaken by the UCSC. Among these, the Swedish Sida funded Networking and PhD projects are handled by the UCSC on behalf of the entire university system of Sri Lanka.

### *Pandora Project*

The objectives of this Canadian IDRC funded project are to evaluate existing Distance Learning (DL) software, both commercial and Open Source (OS), and to identify suitable software that can be customized to meet specific needs of educational institutions in Asian region. The customization would include individual institutional requirements of the system, as well as language localization, of the partner countries involved in the project (i.e. Mongolia, Sri Lanka, Indonesia, and Vietnam).

### *Sida Networking Project*

The general purpose of the project is to improve the networking infrastructure in Sri Lankan Universities. Under this programme campus-wide networks have been constructed at the University of Colombo, University of Peradeniya, University of Ruhuna, while the inter-university backbone network (LEARN) was enhanced in its first phase, 1999-2002. The ultimate objectives of this programme are the following:

- Connect all of the Universities in the country to LEARN.
- Provide internet connectivity to all universities and major research Institutes.
- Obtain sufficient international bandwidth to support the academic activities of the staff and students of the universities and research institutes.
- Expand campus wide networking in other Universities.
- Operate and maintain the campus wide networks.
- Deploy applications such as distance education based on the networks.
- Build and maintain a network management unit to support networking activities in the Research and Education sector.

In the 2<sup>nd</sup> phase commencing 2003, the University of Jaffna network is being setup while each of the networks in the first phase are being upgraded for increased bandwidth requirements. All these networks are now self-financed and continue to server the academic and research community in the country.

#### *Sida PhD Project*

Through the [PhD programme](#) 20 Ph.D. students - all members of the academic staff of Sri Lankan universities conduct their studies towards their Doctorate degrees at Swedish universities. Half of the year they are at their home universities in Sri Lanka, and the other half in Sweden.

At present, eight of these students have got their Swedish licentiate degree and two of them have defended their PhD theses.

#### *Sida e-Learning Project*

During 2003 the [UCSC](#) and its Swedish partner at the IT University in Sweden worked together in the preparation phase of this project, with Sida support. The final proposal has now been submitted and has received a positive response.

The project itself is expected to start in late 2005 and will focus on enhancing the present e-Learning Centre of the UCSC to a full National e-Learning Centre. Through this center it will train trainers in developing pedagogically designed learning materials and train facilitators in deploying and delivering such materials for various stakeholder groups ranging from schools, universities, telecentres and government to private sector companies.

Knowledge transfer from Sweden will mainly be within the area of soft skills, e.g. educational technology theory, instructional design, digital learning environments, as well as the pedagogy, methodology and management of e-Learning.

#### *Asia Link: eBIT Project*

This project is conducted as a joint programme between EU partners, UCSC, Delft University of Technology, Netherlands and the Stockholm University, Sweden to transform the BIT external

degree study programme into a fully fledged e-Learning platform. The project period is three years and will commence in the third quarter of 2005.

### *IDRC Virtual Village Project*

A unique IDRC funded research project on last mile connectivity has been inaugurated by the UCSC in collaboration with Sarvodaya. This project is unique since there will be research studies conducted on both the technical limits of wifi technology for affordable rural connectivity as well as the Socio-Anthropological responses due to the introduction of ICT to such communities. The University of Peradeniya and the Center for women's Research (CENWOR) are the other partners in this two year project.

### **Consultancy at the UCSC**

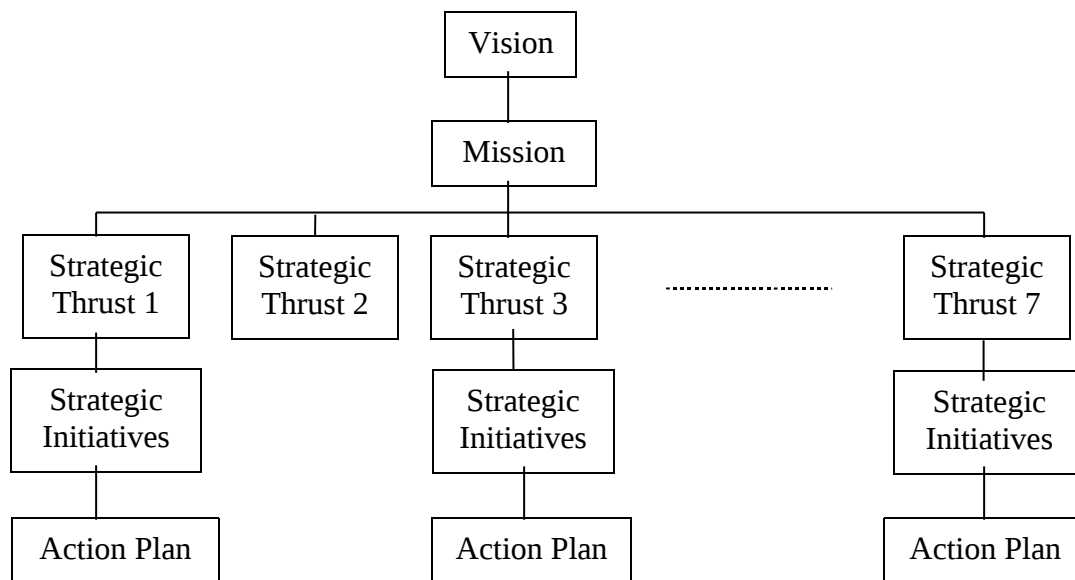
The UCSC, through its consulting arm, the Computing Services Centre (CSC) has designed and implemented the highly secure Intranets for various elections including the Presidential Elections of 2000 and the General Elections of December 2001. Through the CSC we have also been involved in designing, implementing and developing Management Information Systems, databases, websites, the fiber networks as well as Local Area Networks and Wide Area Networks in many organizations some of which are, The Government of Sri Lanka, The Policy Research Information Unit of the Presidential Secretariat, The Ministry of Foreign Affairs, The Kothmale Internet Community Radio Project, The Archeology Department, The Department of External Resources, The Commissioner of Elections, the Government of Sri Lanka, ICT Agency e-Sri Lanka Pilot Projects, Ministry of Agriculture-Live stock Lands and Irrigation, International Development Research Institute (IDRC), Plantation Human Development Trust.

Through this work, the UCSC is able to sustain its staff and has now created a Software Development Unit. We have also made partnerships with other commercial entities in submitting quotations for some of the large donor funded software development projects currently being considered for evaluation in strategic areas of government.

# A Guide to the Corporate Plan

The UCSC Corporate plan has been structured using the guidelines set by internationally reputed universities such as the Oxford University which emphasises the strategic initiatives of the institution for the period under consideration, and the challenges activities flowing out of them. The emphasis is much more on how such strategies can be actualized through the activities identified which result in the activity plans of the succeeding years. The UCSC corporate plan has been developed by carrying out extensive consultations, discussions, arguments and brainstorming sessions by many senior and junior personnel from the academic, administrative and other areas to represent the functioning of the whole organization. It took many months and many tedious workshops, meetings and discussion sessions to come to agreement with the importance, priority, validity and relevance of the strategies mentioned in the plan.

The format of the UCSC corporate plan is for the UCSC to achieve its vision by following the strategies in order to reach higher strategic levels among the university systems not only in Sri Lanka but, in the region. It also attempts to make explicit the underpinning values that the UCSC has been built on and believed in since its inception. The UCSC Corporate plan uses the following structure in common with many of the internationally reputed academic institutions\*.



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\* A quick internet search will show that many more reputed universities use the term 'Strategic Plan' to refer to this document than 'Corporate Plan' (a google search yields 3 of the first 20 using this term are from Sri Lanka!).

# CORE VALUES

The following core set of values are what has guided the decision making process of the UCSC since its inception.

- A commitment to freedom of thought and expression
- Imparting a quality education which enhances the ability of students to learn from life
- The encouragement of curiosity driven research and innovation among students and staff
- An inclusive culture based on dignity and respect with a commitment to equality and diversity
- Recognition of excellence in teamwork as well as individual achievement
- A commitment to the professional development of all staff
- An open, effective and efficient governance and management structure, and transparent communication with all stakeholders
- Inculcating the highest standards of integrity, ethics and conduct in research, teaching and administration
- A focus on contributing to national development and a commitment to rural empowerment
- An Acknowledgment of the importance of opportunities for broadening the experience of students and staff through participation in sport, music, drama, the visual arts, and other cultural activities



# Core Strategic Initiatives

There are 4 major pillars which define the core areas of activity of the UCSC, namely, Education, Research, Consultancy and Social Responsibility. Of these, Research has been recognized as the central pillar which sets the UCSC apart from the rest of the ICT Education sector, and which contributes in turn to the other three pillars.

These pillars themselves are supported by two main sources; the Human and Physical Infrastructure/Resources and the Administrative/Financial services. In addition, all these aspects are held together and directed for optimal efficacy by a 'roof' of Good Governance.

These then form the 7 areas in which strategic interventions are planned for the period under consideration:

1. Education
2. Research
3. Consultancy
4. Social Responsibility
5. Physical and Human Resources
6. Administrative/Financial Services and
7. Governance

There are strategic initiatives identified under each of these seven (7) strategic thrust areas. The following section outlines these strategic initiatives.

## **1 Education**

### **1.1 Attracting good students in SL and overseas**

Current perceptions of IT careers is not in line with global trends and demands. Success of the academic programmes embarked upon by the UCSC depend on attracting high quality students away from other programmes and franchised foreign degrees.

In the short to medium term of this plan period a focused approach to changing these traditional perceptions is to be undertaken with respect to internal undergraduate programmes.

In addition, specific initiatives aimed at marketing the BIT programme overseas as a quality but affordable IT degree of international repute is planned during the entire period.

Apart from mainstreaming an Open Day and a Student Project Showcase, it is also planned to take the BIT to Dubai, Nepal and Maldives.

### **1.2 Setting up effective student teaching and evaluation systems**

In the increasingly globalized market, it is imperative that all programmes adopt international best practice and be accredited. During the period under consideration it is envisaged that significant efforts will be made in academic staff development to adopt, modify and deploy the most appropriate of these to our very own context.

Mobilizing our alumni in complementing our delivery using online and multimedia technologies is one key strategy being planned. Conducting workshops on curriculum design, problem-based learning and achievement measurement with a view to incorporating into our educational process is another important initiative. In order to ensure these programmes are aligned with local and global industry, a high level industry panel is to be involved at a strategic planning level.

## **2 Research**

### **2.1 Setting up mechanisms for identifying and carrying out relevant research**

A key distinctive of the UCSC is its research potential. While some of it has been expressed through various forums, their outcomes have been less than ideal.

The plan over the period under consideration is to realize the full extent of this potential by engaging more fully with the local industry and international researchers in the region and beyond.

In the short-term, workshops are planned for assisting faculty draft and submit better quality grant proposals to national and international donor organizations. In the medium-term, small grants from UCSC's research fund are to be offered through an internal competition. This strategy is aimed at fostering relevant and collaborative research at national and international level leading to schemes of recruitment and promotion for researchers.

### **2.2 Creating a collaborative inter-disciplinary research culture**

Much of the significant research being carried out globally is in inter-disciplinary areas. Traditionally, Sri Lanka has been slow to get into these areas.

The UCSC can play a significant role in national development by undertaking true inter-disciplinary research in collaboration with other faculties in the University and other universities in the country and overseas.

The medium-term small grants scheme planned using UCSC's research fund are to give preference to projects involving expertise outside the UCSC. This strategy is aimed at fostering relevant and collaborative research both nationally and internationally.

### **3 Consultancy**

#### **3.1 Rationalizing consultancy services to public and private sector**

UCSC's Consultancy, though channelled through a centralized mechanism, has increasingly become an independent activity as opposed to being an integral part of its academic and research life.

It is planned to involve greater active involvement of academics in this activity in order to source their expertise and at the same time stretching their skills to apply to the local context within which problems need to be solved.

In the medium term this strategy is expected to enable UCSC to rationalize the consultancy it offers and focus its research to areas which are relevant to industry and society in Sri Lanka.

#### **3.2 Making strategic partnerships with key stakeholders**

The UCSC's consultancy arm, the CSC, has been undertaking training and software development for over a decade. It has however been constrained in recruitment and expansion by the tight regulations under which it operates.

During the plan period, this situation is expected to be eased by the newly setup company, Theekshana. The CSC would continue to offer services and consultancy where the state identity is important.

In the short-term, it is envisaged to conduct a series of presentations to introduce Theekshana and the services it offers to key stakeholders including potential donors, partners and

customers. In the medium-term, Theekshana is to be nurtured into a fully self-supporting not-for-profit organization working in the best interests of the UCSC.

## **4 Social Responsibility**

### **4.1 Taking IT education and products to the periphery**

While the UCSC has always considered its social responsibility seriously in taking the benefits of ICT to the periphery, many of the activities undertaken in its pursuit have been sporadic and not deliberate.

This is an important area for development in this period and will have the side effect of improving our social visibility and thus feeding the strategies which seek to attract good quality students to our undergraduate programmes.

The IT Quiz initiative already underway and its associated workshop series is the largest single investment planned in this strategy. In addition to the other public events and exhibitions including the newspaper, radio and TV programmes the UCSC plans to continue, a specific initiative to provide a conduit to the BPO industry through awareness creation and programme design is planned in the short to medium term.

### **4.2 Mobilizing students to discharge social responsibility**

One of the key under-utilized resources the UCSC possesses is its undergraduate population. They also constitute the single most potent agent of executing the UCSC's social responsibility.

The student body has already been proactive in setting up the infrastructure for an annual IT Quiz. The UCSC has adopted this as a suitable vehicle through which its outreach to the schools can be realized. In addition to this, community IT projects and local language content creation are areas of activity identified to better serve the society we are part of.

## **5 Physical and Human Resources**

### **5.1 Investing in physical resources in and outside Colombo**

While investing in a high quality human resource base has been the overwhelming preoccupation of the UCSC, it has now outgrown the space available to it for effective expansion.

During the plan period a high priority is to be given to expanding the UCSC's physical resources in terms of space for academic, research and consultancy activities.

In the short-term it is planned to extend the existing facility to accommodate the immediate needs. In the medium term two strategies are to be pursued: to build a new building within the University of Colombo premises and to setup a research facility away from Colombo. In addition to this, it is planned to accommodate an incubator facility in order to take the research results from the lab to the real world and to foster entrepreneurship among students.

## **5.2 Attracting international human resources**

The UCSC has been able to increasingly catch the attention of international donor agencies and collaborators especially through the collaboration platform provided by the Internet.

The global playing field opened up by the Internet however also demands an aggressive and agile research agenda. During the plan period, the UCSC expects to improve its international profile by attracting both researchers and projects from overseas – both from among Sri Lankan expatriates as well as foreigners.

A key initiative in this direction is the setting up of the Prof. V. K. Samaranayake Endowment Fund for funding distinguished professorships and research fellows to spend up to 1 year at the UCSC in collaborative academic and research activities. Other initiatives include the working out of a staff industry placement programme and improvement of Non-Academic staff quality to international levels.

## **6 Administrative/Financial Services**

### **6.1 Rationalizing support staff recruitment**

A key weakness in the present support staff recruitment system is that it is mostly reactive rather than proactive. In order to excel in the competitive scenario we find ourselves today, it is crucial that support staff should also be of the highest quality possible.

While the recruitment of permanent executive staff is not within the complete control of the UCSC, several strategies for ensuring we attract the best have been identified. Changes in contract staff recruitment are to be made in the immediate term. Proactive identification of

staff development needs, setting clear job descriptions for staff, online access to documented processes and procedures are all strategies identified to address this situation.

## **6.2 Setting up effective Management and Strategic Information Systems**

The absence of an integrated information systems to provide much needed management information as well as to aid in strategic decision making has been identified as a key weakness.

The internally developed student and examination information system is to be expanded to accommodate other strategic information sources in order to provide information essential for making considered decisions. In the longer term, human resource and customer relationship management components are to be integrated into the system.

## **7 Governance**

### **7.1 Developing agile and responsive governance structures**

While the strategies identified in this plan may have various levels of success during the period under consideration, in order to ensure that the process of continually identifying such strategies in a principled way, the governance structure of the UCSC must be aligned to this task.

During the period of this plan it is envisaged that an agile and responsive set of mechanisms will be put in place to guarantee that the strategic initiatives of the UCSC remain relevant and forward looking. In particular its pioneering spirit is to be maintained as one of its key distinctives through this mechanism.

### **7.2 Enhancing visibility locally and internationally**

One of the key deficiencies identified in the present state of the UCSC is its lack of visibility. While traditionally universities in Sri Lanka could afford to pay scant regard to this aspect, modern realities dictate that marketing is of as crucial importance as delivering high quality education.

This strategy is aimed at addressing the issue of enhancing local and global visibility during the short and medium term, and setting up mechanisms which would routinize this important aspect of our activities.

Apart from brochures, website and video clips being produced as promotional material, a mechanism for the constant updating of these is also planned. Participating in annual events in the industry are also part of this initiative which encompasses both the university level and the wider industry.

The strategic initiatives outlined above will in turn be realized through the activities detailed in the Action Plan given in Annex I and the Budget given in Annex II.

## **Annexure I: Action Plan 2008/09 - 2012/13**



## **Annexure II: Budget 2008/09 - 2012/13**